NTSB National Transportation Safety Board

Improving Safety Through Collaboration: The Safety Regulator's Role

Presentation to: NAPSR Annual Board of Directors Meeting

Name: Christopher A. Hart

Date: September 18, 2014

Outline

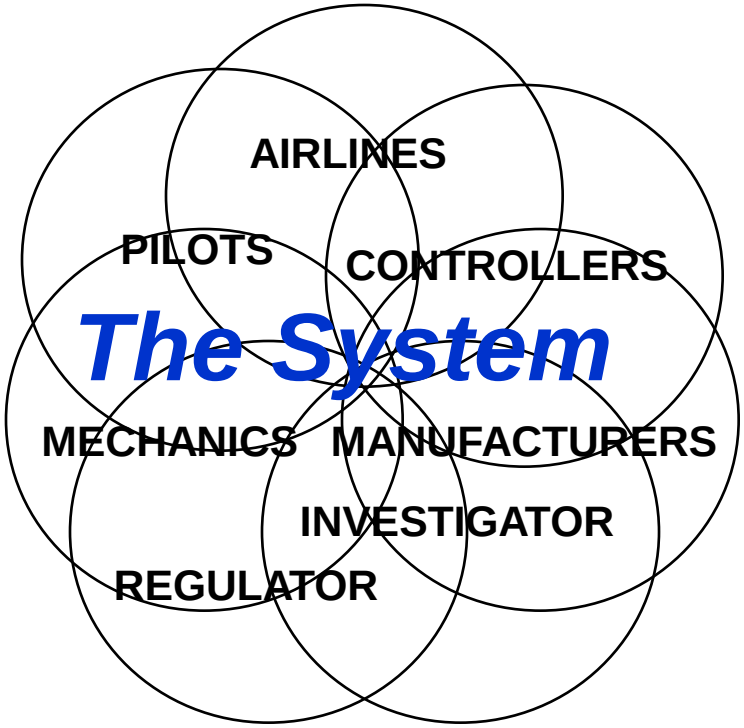
- The Context
- Collaboration Success in Aviation
- Role of Leadership
- Regulator's Challenges

NTSB 101

- **Independent federal agency, investigate transportation mishaps, all modes**
- **Determine probable cause(s) and make recommendations to prevent recurrences**
- **Primary product: Safety recommendations**
  - **Favorable response > 80%**
- ***SINGLE FOCUS IS SAFETY***
- **Independence**
  - **Political: Findings and recommendations based upon evidence rather than politics**
  - **Functional: No "dog in the fight"**

The Context: Increasing Complexity

- **More System *Interdependencies***
  - Large, complex, interactive system
  - Often tightly coupled
  - Hi-tech components
  - Continuous innovation
  - Ongoing evolution
- **Safety Issues Are More Likely to Involve *Interactions Between Parts of the System***



Effects of Increasing Complexity:

More "Human Error" Because

- System More Likely to be Error Prone
- Operators More Likely to Encounter Unanticipated Situations
- Operators More Likely to Encounter Situations in Which "By the Book" May Not Be Optimal ("workarounds")

The Result:

Front-Line Staff Who Are

- Highly Trained

- Competent

- Experienced,

-Trying to Do the Right Thing, and

- Proud of Doing It Well

. . . Yet They Still Commit

Inadvertent

Human Errors

When Things Go Wrong

How It Is Now . . .

You are highly trained

and

If you did as trained, you would not make mistakes

so

You weren't careful enough

so

You should be PUNISHED!

How It Should Be . . .

You are human

and

Humans make mistakes

so

Let's *also* explore why the system allowed, or failed to accommodate, your mistake

and

Let's IMPROVE THE SYSTEM!

Fix the Person or the System?

Is the Person *Clumsy?*

Or Is the Problem . . .

The *Step???*

Enhance Understanding of Person/System Interactions By:

- Collecting,

- Analyzing, and

- Sharing

Information

The Solution: System Think

Understanding how a change in one subsystem of a complex system may affect other subsystems within that system

“System Think” via Collaboration

Bringing all parts of a complex system together to collaboratively

- **Identify potential issues**
- ***PRIORITIZE* the issues**
- **Develop solutions for the prioritized issues**
- **Evaluate whether the solutions are**
  - **Accomplishing the desired result, and**
  - **Not creating unintended consequences**

Objectives:

Make the System

(a) Less Error Prone

and

(b) More Error Tolerant

The Health Care Industry

To Err Is Human:

Building a Safer Health System

"The focus must shift from blaming individuals for past errors to a focus on preventing future errors by designing safety into the system."

Institute of Medicine, Committee on Quality of Health Care in America, 1999

Major Source of Information: Hands-On "Front-Line" Employees

"We Knew About That Problem"

(and we knew it might hurt someone sooner or later)

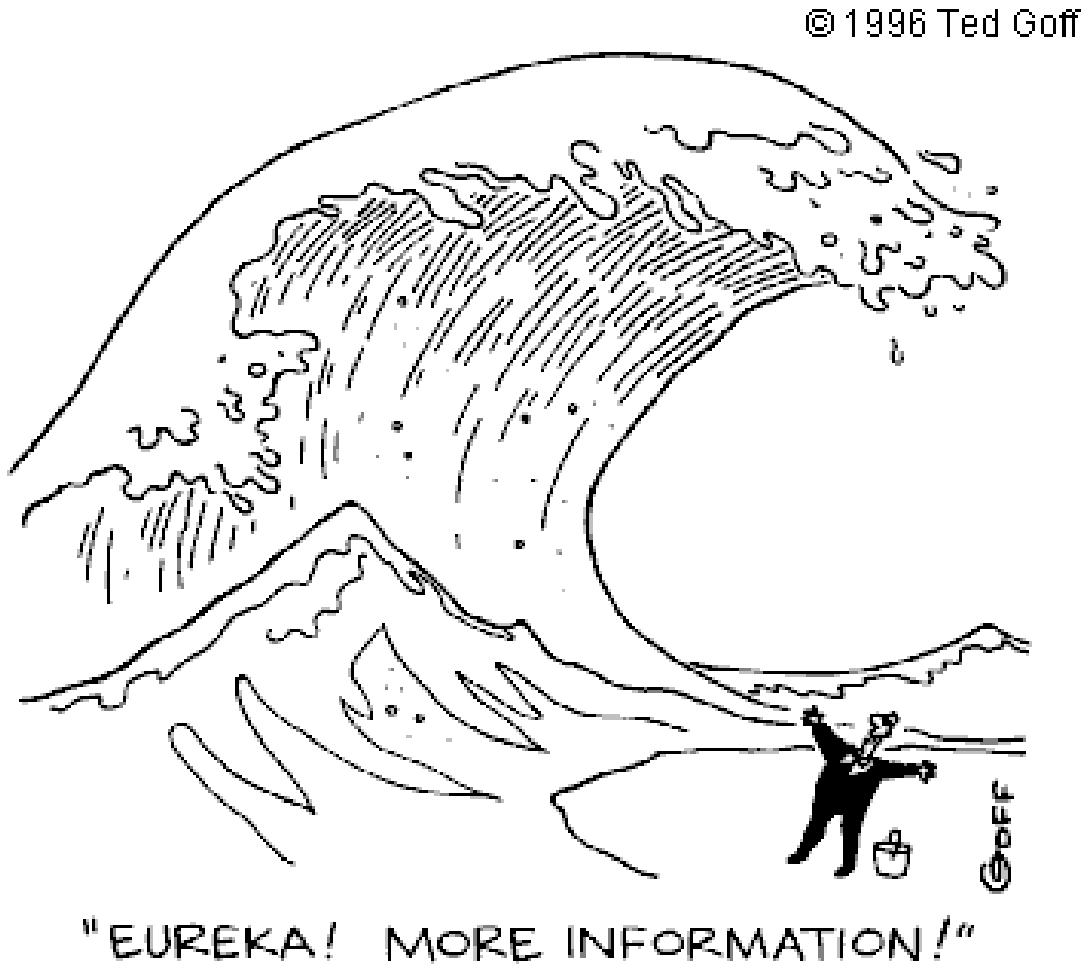
Next Challenge

Legal/Cultural Issues

Improved Analytical Tools

As we begin to get over the first hurdle, we must start working on the next one . . .

Information Overload



From Data to Information

Tools and processes to convert large quantities of data into useful information

Data Sources

Info from front line staff and other sources

DATA

Analysts

Tools

Processes

USEFUL

INFORMATION

Smart Decisions

- **Identify issues**
- ***PRIORITIZE!!!***
- **Develop solutions**
- **Evaluate interventions**

Aviation Success Story

83% Decrease **in Fatal Accident Rate, 1997 - 2007**

largely because of

System Think

fueled by

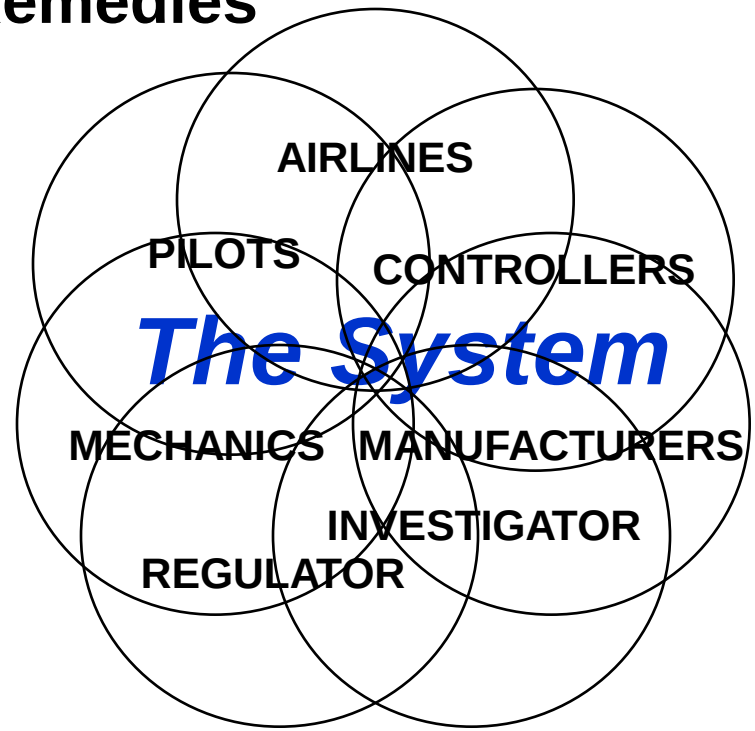
Proactive Safety Information Programs

P.S. Aviation was already considered *VERY SAFE* in 1997!!

Aviation "System Think" Success

Engage *All* Participants In Identifying Problems and Developing and Evaluating Remedies

- Airlines
- Manufacturers
  - *With the systemwide effort*
  - *With their own end users*
- Air Traffic Organizations
- Labor
  - *Pilots*
  - *Mechanics*
  - *Air traffic controllers*
- Regulator(s)



Moral of the Story

Anyone who is

involved in the *problem*

should be

involved in the *solution*

Major Paradigm Shift

- **Old: The regulator identifies a problem, develops solutions**
  - **Industry skeptical of regulator's understanding of the problem**
  - **Industry fights regulator's solution and/or implements it begrudgingly**

- **New: Collaborative "System Think"**
  - **Industry involved in identifying problem**
  - **Industry "buy-in" re interventions because everyone had input, everyone's interests considered**
  - **Prompt and willing implementation**
  - **Interventions evaluated . . . *and tweaked as needed***
  - **Solutions probably more effective and efficient**
  - **Unintended consequences much less likely**

Challenges of Collaboration

- **Human nature: "I'm doing great . . . *the problem is everyone else"***
- **Participants may have competing interests, e.g.,**
  - **Labor/management issues**
  - **May be potential co-defendants**
- **Regulator probably not welcome**
- **Not a democracy**
  - **Regulator must regulate**
- **Requires all to be willing, *in their enlightened self-interest,* to leave their "comfort zone" and think of the System**

The Role of Leadership

- Demonstrate Safety Commitment . . .

But Acknowledge That Mistakes Will Happen

- Include "Us" (*e.g.*, System) Issues,

Not Just "You" (*e.g.*, Training) Issues

- Make Safety a Middle Management Metric

- Engage Labor Early

- Include the ***System*** --

Manufacturers, Operators, Regulator(s), and Others

- Encourage and Facilitate Reporting

- Provide ***Feedback***

- Provide Adequate ***Resources***

- ***Follow Through*** With Action

How the Regulator Can Help: Challenge No. 1

Recognize that

compliance **is very important,**

but the regulator's objective should be

reducing systemic risk

Regulator Challenge No. 2

Emphasize the importance

of System issues

in addition to* *(not instead of)

worker issues

Encourage and participate

in industry-wide

“System Think”

Regulator Challenge No. 3

Facilitate better collection and analysis of information by:

- **Establishing clear policies**
  re protecting information
  and those who provide it

- **Encouraging other industry participants**
  to do the same

Suggested Beta Test

- **Select troublesome area**
  - **Nagging problem for many years**
  - **Many interventions have been tried, not successful**
  - **Likelihood that problems are systemic, not just people**
  - **Collaboration as effort to address the system problems**
  - **Less defensiveness because not focused on single event**
- **Select collaborative corrective action group**
  - **All who have a hand in the process**
  - **Manufacturers?**
  - **Operators?**
  - **Regulators?**
  - **Others?**

System Think at Other Levels

- **"System Think" can be successful at any macro/micro level, including**
  - **Company (some or all)**
  - **Type of activity**
  - **Facility**
  - **Team**
- **"System Think" for a persistent workplace safety issue?**

Manufacturer "System Think" Success

Aircraft Manufacturers are Increasingly Seeking Input, Throughout the Design Process, From

- ***Pilots*** (***User*** **Friendly)**
- ***Mechanics*** (***Maintenance*** **Friendly)**
- ***Air Traffic Services*** (***System*** **Friendly)**

Conclusions

- ***Collaboration is an excellent way to apply System Think to improve safety in complex potentially hazardous industries***
- ***Everyone who has a "dog in the fight," including the regulator(s), must participate in order for the collaboration to be effective***

Thank You!!!

Questions?